

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

IN THE APPLICATION OF:

WIN-CHUNG LEE ET. AL.

CASE NO.: AD6995 US NA

APPLICATION NO.: 10/799056

GROUP ART UNIT: 1713

FILED: MARCH 12, 2004

EXAMINER: WILLIAM K. CHEUNG

FOR: POLYAMIDE AND POLYVINYLBUTYRAL COMPOSITIONS AND BLENDS
COMPRISING MINERAL FILLER AND ARTICLES MADE THEREFROM

APPELLANTS' REPLY BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Appellants respectfully submit this Reply Brief and, for the reasons presented in the Appeal Brief and herein, respectfully request that the Board reverse the final rejections of claims 1 to 21 under 35 U.S.C. § 103(a).

This document is filed in order to provide supplementary comments on a few of the points presented in the Examiner's Answer.

(A) Given the Examiner's Answer's comments on use of various additives in the Blatz composition, Appellants wish to supplement their prior comments.

First, Appellants wish to remind the Board that poly(vinyl butyral) (PVB) is conventionally prepared with plasticizers in the amounts described in Blatz and that Blatz is refers to a composition "consisting essentially of" a specified amount of "plasticized polyvinylbutyral, the amount of plasticizer in said recovered polyvinylbutyral being about 15-35% by weight." (See, e.g., column 1, lines 49-51.) Thus, it can be seen that the plasticizer is not being added as a separate ingredient to the composition and that the teachings concerning the amount of plasticizer being used in the PVB do not support the Examiner's position in the Examiner's Answer. In other words, one of the components of the composition is "plasticized polyvinylbutyral" and thus the discussion of plasticizer is directed to the plasticizer that is part of the plasticized polyvinylbutyral.

In addition, Appellants wish to point out that the reliance on column 2, lines 19-24, of Blatz in the Examiner's Answer is incorrect since that portion of Blatz is describing adding light stabilizers, antioxidants and pigments to the PVB and states that "[a]dditives other than plasticizers are present in only small amounts, no more than a fraction of one percent each." In other words, the disclosure is pointing to the PVB containing very small amounts of these

additives. Since the composition “consists essentially of a uniform blend of” polyamide, plasticized PVB and optionally plasticizer, the additives in the plasticized PVB are not additional ingredients that are construed in what is meant by the “consisting essentially of” phrase.

Upon further review, Appellants also wish to revise and supplement their comments in the second full paragraph on page 7 of the Appeal Brief. The small amounts of dyes, pigments and stabilizers referred to at column 4, lines 29-31, are those that are added to the plasticized PVB and, thus, as described at Blatz column 2, lines 22-24, are only used in amounts no more than a fraction of one percent each in the plasticized PVB.

Similarly, upon further review Blatz’s teachings concerning dusting PVB flake with small amounts of inorganic or organic powder to prevent agglomeration, such as 1% of powdered high density polyethylene, seems to be teaching a modification to the PVB flake added to the composition, rather than adding something to the composition itself.

Consequently, upon further review, Blatz isn’t teaching adding anything other than the polyamide, plasticized PVB and optional elastomer to the composition. In other words, Blatz is teaching a composition consisting essentially of a uniform blend of polyamide, plasticized PVB and, optionally, elastomer and does not intend to include anything else in the compositions. Thus, Blatz is specifically teaching away from adding anything else to the composition.

Appellants point out that given Blatz’s reference to various additives being in the plasticized PVB, the absence of a description of any additives being used in the composition is particularly conspicuous. Certainly, this should be considered by the Board when reviewing Blatz.

Given the above, it can be seen that the person of ordinary skill in the art would not be led to disregard Blatz express and repeated use of “consisting essentially of” and add mineral filler in an amount of from about 10 to about 45 weight percent of the total composition to a thermoplastic polyamide composition. Moreover, given the impact of the fillers on the physical properties of nylon polymers shown in the prior art (e.g., MatWeb) and in the subject application, the person of ordinary skill in the art would readily recognize that a mineral filler has a very significant effect on those properties. For instance, as can be seen from the data presented at page 10 of the Appeal Brief MatWeb nylon 66 has an average flex modulus of 2 Gpa and an average Notched Izod of 150 J/m, whereas a 10% mineral filled nylon 66 has an average flex modulus of 4.2 Gpa and an average Notched Izod of 89 J/m. Consequently, Appellants submit that the addition of mineral filler in an amount of from about 10 to about 45 weight percent of the total composition to the Blatz composition would materially affect the basic and novel characteristic(s) of the Blatz composition

(B) Given the Examiner's Answer's comments on the data presented, Appellants wish to supplement their prior comments.

Appellants wish to point out that the data was submitted for two reasons: (1) to show that the state of the art or what a person of ordinary skill in the art would expect concerning the benefits of adding both fillers and tougheners to nylon; and (2) to support Appellants' assertion that unexpected results are obtained with the claimed invention.

Concerning these points, the Office Action dated August 15, 2006, states at page 4, second paragraph:

"Applicants must recognize that it is well known in the art of polymer composite materials that when a toughener is added to plastic materials, the plastic materials are expected to be improved in mechanical properties such as Notched Izod Impact properties."

Appellants have submitted literature data this trend does not occur with filled systems and the Examiner's Answer ignores the fact that the data presented shows that this trend does not occur with filled systems. The data in the literature, summarized in the table at the top of page 11 of the Appeal Brief, shows that addition of impact modifier increases the average Notched Izod value for Nylon 66 polymers. That is, the average Notched Izod rises from 150 J/m to 550 J/m. However, when mineral filler is added the Notched Izod values are substantially lower than the values obtained with Nylon 66 by itself. From the data, it appears that the mineral filler seems to destroy the benefit obtained with the impact modifier.

The Examiner's Answer states that the results described with respect to filled nylon support the position that the obtained results would be expected, but fails to consider the literature data presented concerning impact grade (toughened) nylon and filled, impact grade nylon. In addition, the Examiner's Answer seems to contradict itself. For instance, at page 7, the Examiner's Answer characterizes Appellants arguments by stating that: "Appellants argue that claimed invention provides an unexpected balance of both strength, as demonstrated by flexural modulus (stiffness), and impact, as demonstrated by notched Izod impact properties." The next two sentences state that the data presented with respect to fillers increasing strength and reduced impact properties is "expected." Similarly, the paragraph at the top of page 8 of the Examiner's Answer also focuses on the trends that occur when filler is added to nylon. The Examiner's Answer fails to consider the fact that the data presented shows that this trend occurs with impact grade (toughened) nylon. That data contradicts the position taken in the Office Action that the tougheners would be expected to increase the impact properties. In any event, the conclusion appellants ask the Board to draw is that the data presented shows that the person of ordinary skill in the art would expect that impact properties are not improved by adding tougheners to filled nylon. Once that conclusion is drawn, Appellants submit that the Board should hold that *prima facie* case of obviousness has not been established since given the teachings of Blatz and given this knowledge, the person

of ordinary skill in the art would be led away from modifying Blatz as suggested in the rejection. Even if the Board holds that a *prima facie* case of obviousness has been established, Appellants respectfully request that the Board consider this data to establish what would be expected by the person of ordinary skill in the art and hold that given the data presented an unexpected result has been demonstrated.

At the bottom of page 7, the Examiner's Answer states that "appellants fail to recognize that the material system as claimed is different from nylon 6 and nylon 66 being argued." Appellants do not understand why the Examiner's Answer makes this point. The chart at page 10 shows data for both nylon 6 and 66 so that it can be seen that there are similar trends with both of these nylons. In addition, much of the data concerning nylon 6 and nylon 6,6 was obtained from MatWeb <http://www.matweb.com/>. That data is presented to show the general trends that would be expected with various grades of nylon. For instance, many of the pages submitted include an explanation that the property data has been taken from proprietary materials in the MatWeb database and each property value reported is the average of appropriate MatWeb entries. Thus, Appellants submit that this data should be appropriate to describe the general trends that would be expected by the person of ordinary skill in the art and is representative of the prior art.

Appellants also presented data concerning DuPont Zytel[®] 101 Nylon 6,6 from the MatWeb database and DuPont's literature (DuPont Zytel[®] Nylon Resin Product and Properties Guide) in order to see the data for a specific grade of Nylon 6,6 and to compare those values to the data in the specification.

Appellants submit that the data presented should be considered to adequately demonstrates the data available in the public domain concerning what would be expected by the person of ordinary skill in the art. At a minimum, this data should be considered adequate to shift the burden to the Examiner to present prior art that shows that a different trend is disclosed in the prior art.

In addition, Appellants submit that the MatWeb data, along with the other data presented, should be considered appropriate to show the results that would be expected with nylon 6 and nylon 66 based upon the prior art, and to support Appellants' assertion that unexpected results are obtained with the claimed invention. Concerning this point, it should be noted that Blatz and Hendrick don't contain any teachings or examples concerning using both fillers and tougheners, so there is nothing in either of those documents that can be used as a fair basis for comparison. Thus, Appellants were forced to look for other literature data to support its position concerning the state of the art and prior art expectations to rebut the position that the results obtained with the invention were expected.

From the data presented, it can be seen that the general trend shown in the literature for nylon 6 and nylon 66, including impact grades, is for addition of mineral to provide an increase in strength (stiffness) and a significant decrease in impact. Unexpectedly this trend

can be reduced by adding the tougheners of this invention. For instance, Example 4 actually obtained better impact than would be expected based upon the literature data.

From the tables presented it can be seen that addition of impact modifier increases the average Notched Izod value for Nylon 66 polymers. That is, the average Notched Izod rises from 150 J/m to 550 J/m. However, when mineral filler is added the Notched Izod values are substantially lower than the values obtained with Nylon 66 by itself. From the data, it appears that the mineral filler seems to destroy the benefit obtained with the impact modifier.

Comparing the literature value for Zytel[®] 101 nylon resin to the value of Comparative Example 2, it can be seen that the mineral filler also reduces the impact values obtained with Zytel[®] 101 nylon resin. However, when the toughener of the invention is used in mineral filled systems, the impact values are comparable or better than those obtained with Zytel[®] 101 nylon resin by itself. This result is unexpected.

For reasons presented in the Appeal Brief and herein, Appellants respectfully request that the Board reverse the final rejections of claims 1 through 21 under 35 U.S.C. § 103(a), and remand the application to the Examiner for passage to issue.

Conclusions

For reasons presented in the Appeal Brief and herein, Appellants respectfully submit that claims 1 through 21 are in condition for allowance. Accordingly, Appellants respectfully request that the Board reverse the final rejections of claims 1 through 21 under 35 U.S.C. § 103(a), and remand the application to the Examiner for passage to issue.

It is believed that no additional fees are due in connection with the filing of this Reply Brief. However, should any fee be due or should Appellants be entitled to any credits, please charge any such fees or render any such credits, to Deposit Account 04-1928 (E. I. du Pont de Nemours and Company).

Respectfully submitted,

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